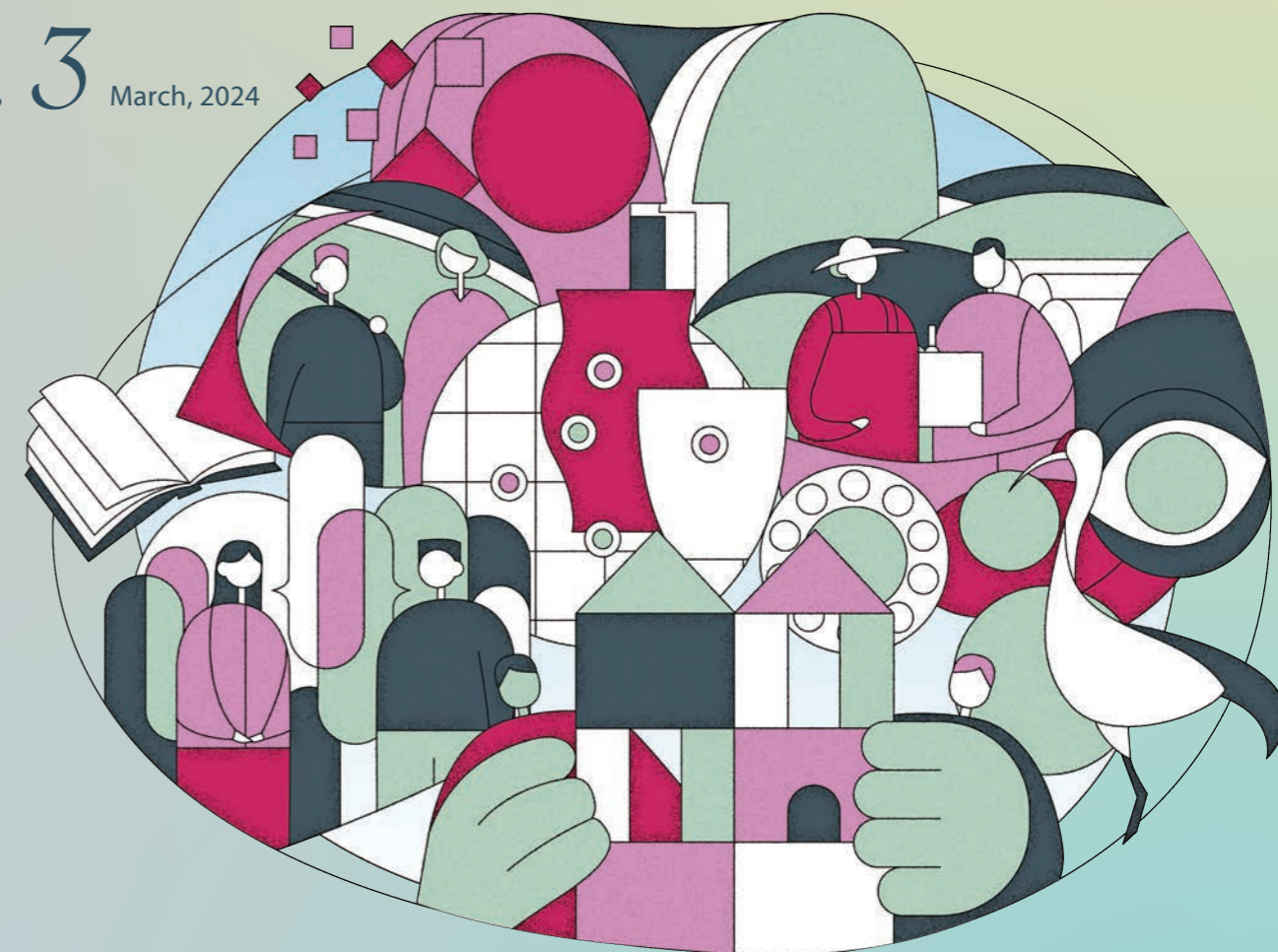


# Lab. Letters

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## HOKKAIDO UNIVERSITY

Faculty of Humanities and Human Sciences  
Graduate School of Humanities and Human Sciences  
School of Humanities and Human Sciences

### Contact us

Kita 10, Nishi 7, Kita-ku, Sapporo, 060-0810, Japan  
<https://www.let.hokudai.ac.jp/en>



**Combining Interdisciplinary Research and Different Fields**

## Combining Interdisciplinary Research and Different Fields with Humanities and Social Science & AI & Neuroscience, and with Art & Regional & Social Issues

At the Graduate School of Humanities and Human Sciences of Hokkaido University, we actively promote interdisciplinary research combining different fields. Through collaborations with researchers from various fields, we face the problems in our increasingly complex modern society, focusing on regional and social issues. Each researcher, while grounded in their own expertise, incorporates and integrates perspectives from other research fields and various stakeholders' viewpoints to open up new academic horizons.

### +plus Museum Program



The roles required of museums have been growing increasingly diverse in recent years. While the traditional tasks of collecting, preserving, and utilizing materials are still important today, there has been a steady rise in the number of instances of museums actively contributing to issues such as the promotion of tourism, the revitalization of regions, and the regeneration of townscapes and local communities. Furthermore, various keywords such as people's happiness, health and welfare, social inclusion, and the realization of a sustainable society are also gaining attention as new areas where museums may have roles to play. This program explores the possibility of adding museums to the mix of experts across diverse domains in order to uncover ways to approach the various issues that surround us in ways that only museums can.

### Center for Human Nature, Artificial Intelligence, and Neuroscience (CHAIN)

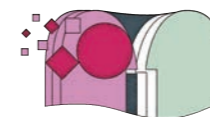


What does it mean to be human? This is the question that the Center for Human Nature, Artificial Intelligence, and Neuroscience (CHAIN) is attempting to answer through interdisciplinary study of the humanities, social sciences, neuroscience, and artificial intelligence. At the intersection of these disciplines, the Center intends to integrate highly philosophical ideas with mathematical and empirical scientific methods and findings through a close collaboration between specialists from diverse disciplines. The Center offers a graduate-level education program integrating humanities and sciences.

# Contents

## 1 Logic

Associate Professor  
**SANO Katsuhiko**



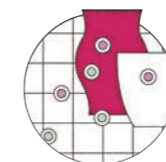
## 5 General Linguistics, Japanese Linguistics, Linguistic Pragmatics

Professor  
**KATO Shigehiro**



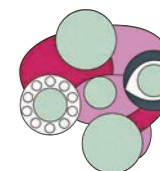
## 2 Archaeology, Archaeological Science

Associate Professor  
**KUNIKITA Dai**



## 6 Vision Science

Associate Professor  
**KANEKO Sae**



## 3 History and Culture of Wildlife, Museology

Associate Professor  
**HISAI Atsuyo**



## 7 Social Psychology, Social Decision Making, Adaptive Decision Making

Professor  
**TAKEZAWA Masanori**



## 4 Gender, History of Thought

Professor  
**MIZUTAMARI Mayumi**



## 8 Rural Geography, Economic Geography, Tourism Studies, Community Development

Associate Professor  
**HAYASHI Takuya**



## Modal logic that delineates the world through various combinations of “◇” and “□”

Logic, first systematized by the philosopher Aristotle, refers to a study that aims at the accurate and thorough delineation of the world. Various philosophers have taken their own approaches to addressing the challenging issue of how they should describe the world.

I have been interested in modal logic that addresses possibility and necessity of a proposition  $p$ , as represented symbolically by the expressions “◇ $p$ ” (i.e., “It is possible that  $p$ .”) and “□ $p$ ” (i.e., “It is necessary that  $p$ .”). While it is natural to relativize the truth of the possibility and necessity of  $p$  in terms of states or possible worlds, we may also relativize the truth of a given statement to several factors or domains, such as time, space, and agent. Each such relativization gives rise to new readings for ◇ and □. I have been involved in research on combining several readings of ◇ and □. I am currently investigating what results will follow from applying logic to social networking services such as Facebook.



Associate Professor  
**SANO Katsuhiko**

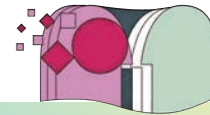
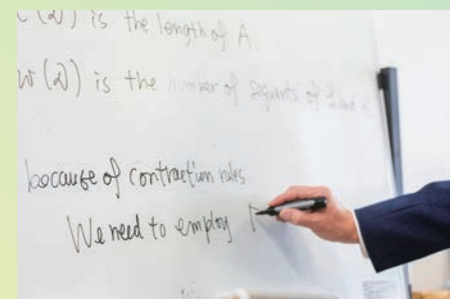


### Faculty - Division / Research Group / Laboratory

Division of Humanities / Research Group of Philosophy and Religious Studies / Laboratory of Philosophy and Ethics

### Research Subject

My research area is non-classical logics (in particular, modal logic) and their application. I am also interested in semantics of interrogatives (especially, inquisitive semantics), logical analysis of puzzles on agents' knowledge and belief, and history of logic (especially, Alan Turing's thought).



## Aim for infrangible formalizations and proofs, with a smooth connection between symbols and meanings.

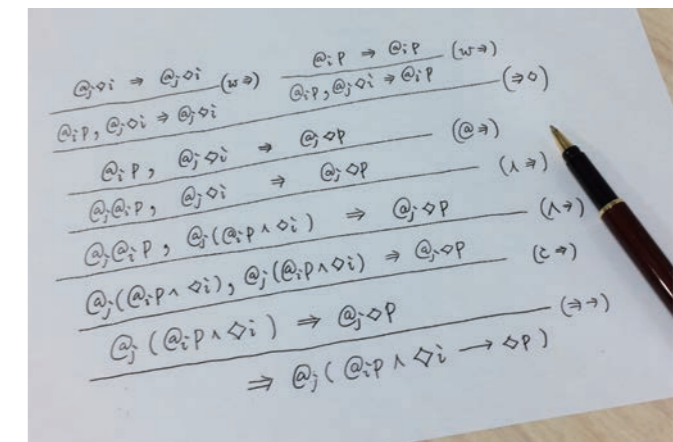
At Hokkaido University, logic lectures are held annually in the undergraduate and graduate programs, which show that the university regards this subject as important. As a logician, I am delighted to conduct research in this excellent environment.

To study logic effectively, it is essential to practice writing proofs on paper. I would like my students to acquire the

habit of checking whether symbols and their meanings are smoothly linked to each other by writing them down on paper. As Professor Kei Chiba, who is my former colleague in the Philosophy and Ethics Laboratory at Hokkaido University, says, “It’s important to write infrangible sentences.” I second his slogan, and I would like to help you foster your research so that you can obtain infrangible formalizations and proofs!



Associate Professor Sano has translated and explicated a thesis of the English logician Alan Turing, who is known for having broken the Enigma code, and this translation has been published as a co-authored book.

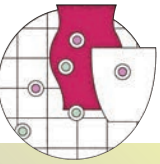


We usually decide our plans based on information written in a calendar or a notebook, which statement we can formalize and justify in terms of an expanded modal logic, called hybrid logic, as shown above.



◀ Removing charred residues on excavated pottery to identify what was boiled or cooked in the vessel and what kind of food ancient people lived on.

◀ Japan-Russia joint surveys conducted at the Malaya Gavan site in the Russian Far East; you must be aware that you will invariably have difficulty moving through any field you find yourself in.



## Hokkaido University is poised to begin producing archaeological researchers addressing diverse archaeology research

The laboratory of archaeology at Hokkaido University, which was previously known as the course of northern cultures, covers a wide range of disciplines related to archaeology, boasting faculty members who are among the best in the nation. In collaboration with the Hokkaido University Museum and the Hokkaido University Archaeological Research Center, research achievements cultivated over many years and extensive human resources both at home and overseas will strongly support your research.

Hokkaido University is the second national university to have obtained admission to the archaeological researcher qualification system. The amendments to the Law for the Protection of Cultural Properties have promoted the trend toward emphasizing not only the preservation of cultural assets but also their application as tourism resources. Gathering the latest information on cultural assets belonging to the general public and acquiring accurate expertise in them will help you make a soft landing once you are employed.

## An archaeological scientist in field investigations disclosing information on archaeological remains through dating

I was a second-year student at a university when I first participated in excavation research in Primorsky Krai, Russia. Since then, I have engaged in fieldwork every summer as an investigation member. Archaeological scientists specializing in analytical research generally tend to favor laboratory work, and few in Japan seem to understand the appeal of fieldwork. After learning a wide range of procedures at excavation sites and returning to the laboratory with samples and the excitement surrounding those sites, you can further immerse yourselves in laboratory work.

The most important information you wish to disclose from excavated remains is the date. Once you can determine the age in which something was used, it is as if you have identified a secret password that serves as a breakthrough for eliciting relevant and diverse information from the archaeological remains.



Associate Professor  
**KUNIKITA Dai**



**Faculty - Division / Research Group / Laboratory**

Division of Humanities / Research Group of History /  
Laboratory of Archaeology

**Research Subject**

I am researching human activities and environmental changes in prehistoric period. In particular, I have been studying past food habits and cultural transitions using natural scientific methods such as dating and isotope analysis.



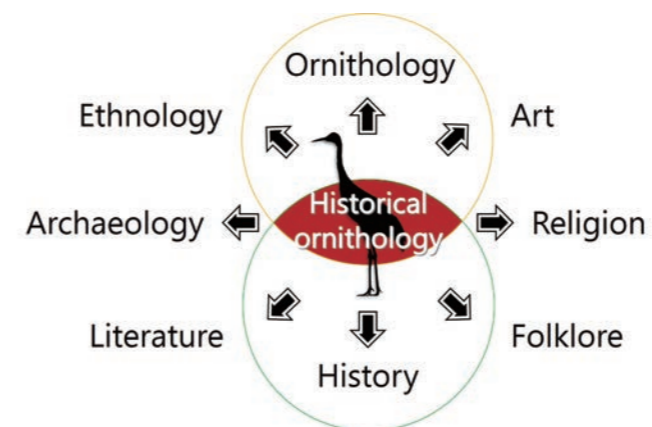
## The future of symbiotic relationships between cranes and humans narrated by ancient documents

When I encountered a sentence from ancient documents saying that cranes were important prey for falconry in the Edo period (1603-1867), I wondered if the cranes mentioned in the documents referred to red-crowned cranes mainly inhabiting Hokkaido or lesser hooded cranes. In addition to the identification of the specific variety, my research focuses on animals portrayed in literature to delve into relationships between animals and humans, which is a highly novel research field. With few preceding studies, I take all the more delight in discovering new accounts related to animals, which further motivates me to become engrossed in literature research.



Cranes, regarded as an auspicious symbol, are all too common in our life. Collecting crane-related goods is also an important aspect of my research.

## 3 History and Culture of Wildlife, Museology



When it comes to animal studies, zoology may be the first thing that comes to mind, but I am nurturing the perspective of historical ornithology by linking diverse disciplines through the medium of cranes.

## Graceful, fierce God of the Marsh; Truth that clearly stands out from the scrutiny of literature

Records reveal that red-crowned cranes, referred to as sarorun kamuy in the Ainu language, bear a graceful and noble image, but were dreaded by the Ainu people as fierce and dangerous. When I first stood face-to-face with wild red-crowned cranes, even I feared for my own physical safety for a moment. I experienced their tremendous impact firsthand, which led me to understand why the Ainu people came to describe the avian species in this

way. Direct observation of these cranes clearly unveils the truth the literature intended to convey. What I learned from this was truly precious. Hokkaido, which is home to a variety of wild animals, potentially embraces fascinating research subjects other than red-crowned cranes, such as brown bears, Hokkaido deer and sea eagles. Let's pave a new way for community-based wild animal research!

Associate Professor  
**HISAI Atsuyo**



**Faculty - Division / Research Group / Laboratory**

Division of Humanities /  
Research Group of Cultural Diversity Studies /  
Laboratory of Museum Studies

### Research Subject

I am engaged in research to restore the past ecology and distribution of wildlife and clarify their relationship with humans, mainly using historical materials from the Edo period. I also study the history of animal management at zoos in modern Japan, based on records of zoos in the past, mainly Ueno Zoo.





## Group activities that convey the dynamism of those who lived in coal mines

In the 1950s, domestic coal mines served as focal points for cultural activities related to literature, choral groups, plays and so on. Community magazines focusing on regional topics were also published. These magazines covered a broad range of topics, including those specific to coal mines. The intention was to inform the world of the oppressive working conditions. Printed pages successfully conveyed to readers the dynamism of those who lived at coal mines.

In 1958, the *Circle Village* monthly magazine, aimed at networking group activities based in local communities, was first published in Nakama City, Fukuoka Prefecture. The editorial board included Gan Tanigawa, Kazue Morisaki, Eishin Ueno and other intellectuals. It was my study of Kazue Morisaki that led to the beginning of my research on group activities. Going further from a starting point into an unexpected route may be a lure of literary research.

## Fresh testimony, natural bounteousness and wider perspectives obtained in Hokkaido

It was in 2002 that I came up from Tokyo to take a position at Hokkaido University. Visiting Yubari, Bibai and Utashinai, which were once major coal mining areas, I was able to hear helpful stories from those who knew of those days. What was nurtured in my mind through these opportunities was a new perspective: that of outlying regions. The history of people who led vibrant lives and were emotion-

ally attached to outlying hometowns that were beyond the view of more centralized areas captured my heart, coupled with Hokkaido's great natural splendor. By coming to Hokkaido, I was able to expand my perspective, and this was the greatest boon in my life. From now on, by focusing on postwar writers such as Taijun Takeda and Yoshie Hotta, I relish further detours.



The second vertical shaft turret of the Miyanohara pit at the Mitsui Miike Coal Mine: A community was established in company housing (terraced houses).



*Circle Village*, which ceased publication with its October 1961 issue, included poetry, tanka (31-syllable verse), essays and the columns "Ofuku Shokan" (correspondence), as well as short stories and "Kikigaki" (narratives written in the first person based on interviews with local people).

Professor  
**MIZUTAMARI Mayumi**



### Research Subject

Postwar cultural movement centered on Circle Village. Japanese feminist thought. Examination from an ideological perspective of postwar literature centered on Yoshie Hotta.

### Faculty - Division / Research Group / Laboratory

Division of Humanities /  
Research Group of Cultural Representations /  
Laboratory of Visual and Modern Culture

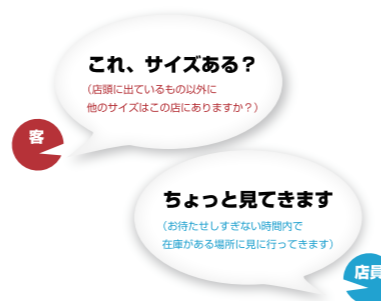


## Language does not always convey the literal meaning — “*chotto*” does not mean only “a little”.

**We make use of context, or read between the lines,  
to understand the full meaning of what people say.**

When a customer asks at the bookstore “Do you have books titled XXX?”, the shop clerk answers just “*Chotto...*” This word originally means a small quantity, but this utterance does not mean “they have just a few books of that title”. Most Japanese can easily interpret it as “they do not have any” because “*chotto*” is used here as a discourse maker, which implies that the speaker cannot meet the hearer’s request or wish. We convey and receive more than what is expressed into words. This is because most of us can make use of context. My field of interest is pragmatics, which deals with implicatures, the meaning conveyed beyond the literal meaning of utterances. Our communication does not work without adequate understanding of implicatures.

If you research Japanese linguistically, topics and questions are inexhaustible. Do you know “neo-dialect”, which is a sort of interlanguage between a local dialect and the standard Japanese? Every day new expressions and usages come into the world and we discover novel changes of our language. For instance, technology usually brings about big changes in our communication style and language itself. “*Nau*”, which is borrowed from English, is a new type of SNS slang in Japanese. Interestingly, it is located after the pivot word, which does not follow the strict word order rule in Japanese.



The adverse conjunctive particle, whose standard form is “*noni*”, varies from “*domo*” in Tohoku to “*batten*” in Kyushu.  
(Quoted from Grammar Atlas of Japanese Dialects, NINJAL)



## Is the doubled honorifics not allowed in Japanese?

Some books point out that doubled honorifics, such as “*Goshichaku nasaimasu-ka*”, grammatically wrong, but this description itself is not scientific and totally wrong. It is true that doubled honorifics are redundant and excessively polite, but it is correct in terms of the language structure and grammatical rules. As long as they are used, languages invariably fluctuate. Even novel and strange expressions, if regarded as necessary in the speech community, will remain as parts of the language.

The most powerful driving force for an affluent research life is your independence. Of course, as a supervisor, I am willing to provide support for your academic presentations and paper submissions.

Why not foster logical thinking through linguistic analysis, as well as improving your ability to gain an in-depth understanding of things?



Professor  
**KATO Shigehiro**

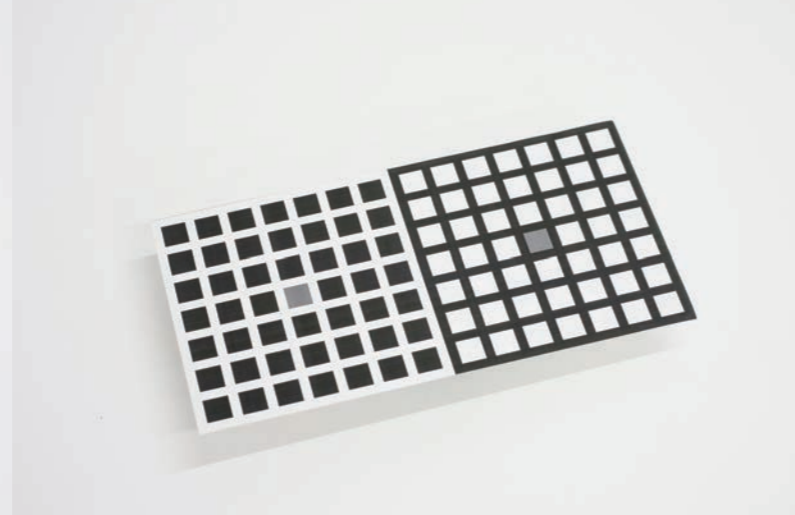
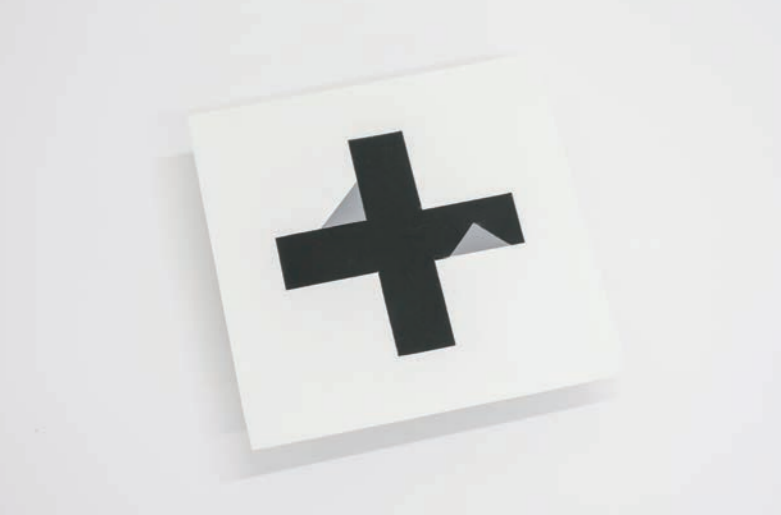
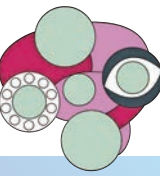


**Faculty - Division / Research Group / Laboratory**

Division of Humanities /  
Research Group of Linguistics / Laboratory of Linguistics

**Research Subject**

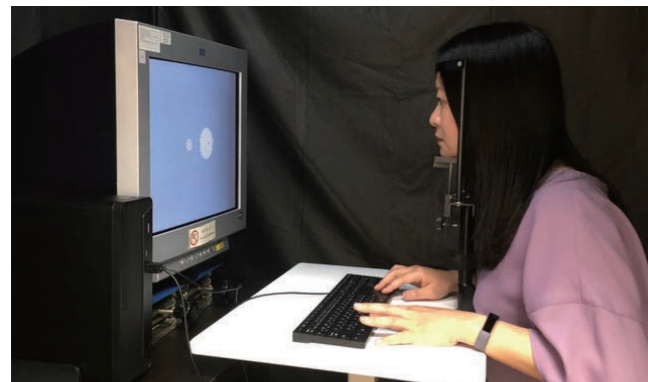
- Japanese Grammar (chiefly, modification structure, parts of speech, postpositional particles, tense and aspect in predicate semantics, modality and quantification floating)
- Pragmatics (discourse markers, world knowledge organization, memory-based model of context, deixis, and semantic calculation or interpretation processing)
- Fundamental Theory of Linguistics / Sociolinguistics / Psycholinguistics (psychopragmatics)



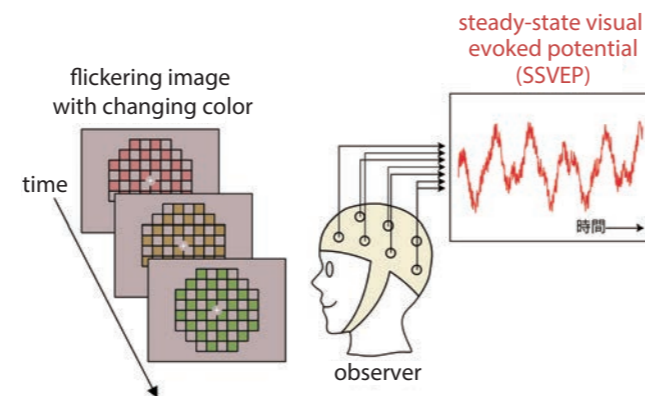
## Chasing the wonders of vision: vision converts objective reality into subjective experience.

The vision we enjoy in our daily lives consists of three factors: external stimuli, senses to perceive them, and subjective visual experiences. Vision conjures up some wonderful illusions: jazzy static patterns that appear to be moving, colored objects that look completely different colors to yourself and a friend when you both look at them.

Why do these illusions happen? Everyone can easily experience them, which is what makes vision so interesting. You can formulate your own hypotheses to explain these illusions and analyze data from your own experiments. When you complete these processes, new discoveries that only you can obtain will surely await you.



Psychophysical experiments are conducted to record detailed judgements on figures with various colors and sizes on a screen, thereby measuring subjective experiences.



In one of the studies, we measured electroencephalograms (EEGs) to examine brain responses to different colors.

## Perfect place for lively discussions and active research collaborations.

The laboratory of psychology at Hokkaido University is home to a number of researchers who specialize in human vision. This provides an ideal environment for lively discussion and joint research. There is also the Center for Human Nature, Artificial Intelligence, and Neuroscience of Hokkaido University that serves as a platform for interdisciplinary studies on the brain and mind. I may have a chance to collaborate with these people from different disciplines. During my student days, I was lucky to be in an environment where I received one-on-one

guidance from my academic supervisor. Through his guidance, I gained a variety of experiences that I've used since I became independent, such as experimental know-how, and the scientific acumen needed for research. The most important lesson I learned from him is "don't be afraid to try my hand first, before thinking too hard". I owe what I am today to interactions with my supervisor in those early days, and I'm determined to spend my days productively to do the same for my future students.

Associate Professor  
**KANEKO Sae**

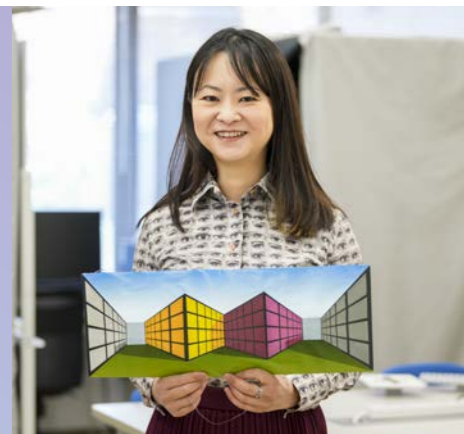


Graduate School - Division / Department / Laboratory

Division of Human Sciences /  
Research Group of Psychology /  
Laboratory of Psychology

### Research Subject

I am interested in how we see the world, especially how we use spatial and temporal contexts to process visual information in the brain. I mainly conduct experimental research using psychophysical methods.





Professor  
**TAKEZAWA Masanori**



**Faculty - Division / Research Group / Laboratory**

Division of Human Sciences /  
Research Group of Behavioral Science /  
Laboratory of Behavioral Science

**Research Subject**

Evolution of cooperation, Cultural evolution,  
Cognitive foundations of culture



## What Makes the Human Beings Distinct from the Other Animals?

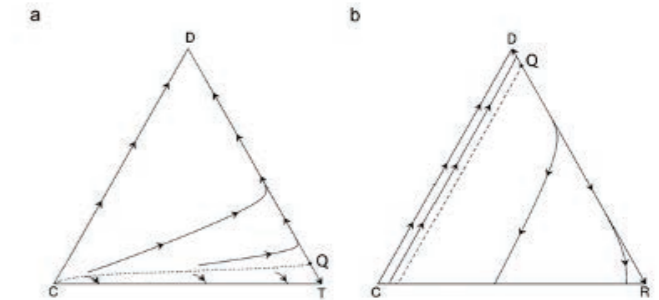
Recent advancements in comparative cognitive science have revealed that the human beings share much more commonalities with the other animals than had been considered. Not only the humans but also other primates, even horses, care inequality of the wealth between their conspecifics. Birds, squirrels, and even hermit crabs socially learn important information from their conspecifics. What then makes the human beings unique and distinct from the other animals?

Culture and social norms – that is an answer. Then, how could the human culture and social norms have arisen in the societies consisting of the human individuals, which share so many similar features with the other animals? That is the question I have been pursuing in my research.



A laboratory experiment of cumulative cultural evolution of technology for constructing a tower. Technology gradually advanced as it was transmitted from generation to generation and the convergent evolution of technology was robustly observed.

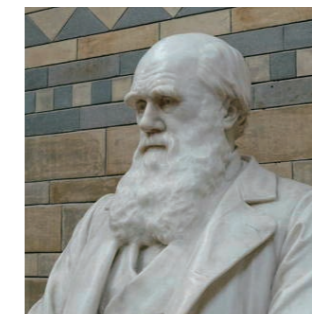
## 7 Social Psychology, Social Decision Making, Adaptive Decision Making



Evolutionary game theory is a mathematical tool for analyzing the social dynamics and widely used in the evolutionary social science. Reprinted from Figure 4 in Takezawa, M., & Price, M. E. (2010). Revisiting “*The evolution of reciprocity in sizable groups*”: Continuous reciprocity in the repeated  $n$ -person prisoner’s dilemma. *Journal of Theoretical Biology*, 264, 188–196.

## A Newly Emerging Research Field of Evolutionary Social Science

In the last two decades, the evolutionary thinking has gradually spread in both cognitive and social sciences. Researchers in many academic disciplines have been asking how the human mind is shaped by the processes of the Darwinian evolution, and how the human culture and societies have emerged through the interactions of the individuals which actions are controlled by the evolved cognitive system. This emerging intellectual movement does not yet have a proper name, but it is best called evolutionary social science. I have been working in close relation with this field by studying



topics such as adaptive rationality, evolutionary foundations of learning, cumulative cultural evolution and the evolution of social norms.


Let us consider about culture as an example. Many different cultures exist in the world. How do we explain variety and diversity of culture as we see now? In biology, culture is defined as a set of information that is transmitted via non-genetic routes. People acquire beliefs, values, and knowledge via teaching, socialization, imitation and social learning. We can thus consider that variation in human culture emerges from the processes of iterated transmission of information across generations. One of my research topics is to explain how scientific knowledge and technology that cannot be attained by a single individual emerges through the processes of cultural evolution.



## Developing a way of thinking that combines the humanities and sciences through field work as an integrated science

When providing students with research guidance, I have always tried to help students acquire knowledge and experience that will serve as a benchmark even in their later lives. The success of field work requires the existence of cooperative partners. I really expect you will be a full-fledged human being, remembering the gratitude to those who helped with the investigation.

To carefully investigate, analyze and understand phenomenon taking place in a particular region, it is imperative to pay attention to findings and theories in various disciplines as well as to comprehensively understand communities based on such knowledge. This is why geography is also referred to as an integrated science. I do hope that you will develop a way of thinking that combines the humanities and sciences by experiencing as much field work as possible during your university days. I will also be pleased if you retain reciprocal and cheering feelings for the community that was willing to support you.



I take my seminar students on an annual visit to Wara District, Gujo City, Gifu Prefecture, to interview residents about community development, rural migration, tourism promotion, and the local community. And we develop products and hold a quiz event in the festival of Wara District.

## Theoretical, empirical, and practical research on community development

My interest lies in methods and collaboration for promoting community development, with rural residents as the core and migrants and volunteers from outside the region working together. Since humans have been and continue to effect significant regional changes, I focus on clarifying the meaning and characteristics through interviews, questionnaire investigations, participant observation, and collaborative activities.

Combining field surveys, student education, and regional collaboration activities deepens the research perspective, and grasping the reality of the situation deepens the understanding of residents' awareness and behavior. Furthermore, I feel that conducting collaborative activities in the field creates a cycle in which theoretical and empirical research evolves.

I also hold an annual visiting lecture event involving my seminar students in Wara District. It is a valuable learning opportunity for students to discuss their research results with people who are highly interested in community development activities. I have been facilitating this activity since 2016, as a reference for participants' future activities and local practice.



Associate Professor  
**HAYASHI Takuya**

Associate Professor Hayashi has moved to a post at a different university from April 2026.

### Faculty - Division / Research Group / Laboratory

Division of Human Sciences / Research Group of Regional Science / Laboratory of Regional Science

### Research Subject

My research is fieldwork based, with a focus on the relationships between humans and places.

The main themes are as follows:

1. Roles and collaborations among actors in rural tourism, community development, and agricultural promotion, as well as the social environment and regional conditions for creating leadership and entrepreneurship
2. The impacts of migrants' practical activities on local communities and residents and intermediaries' role in supporting migration in rural areas
3. Merits and demerits of tourist sites on the World Heritage List
4. The role of "agriculture" in cities
5. Intellectual property rights and branding strategies in the agriculture sector